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09/735,149	12/12/2000	Nikolai Nefedov	297-009990-US(PAR)	4688

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EXAMINER

WONG, BLANCHE

ART UNIT

PAPER NUMBER

2667

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6

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/735,149

Applicant(s)

NEFEDOV, NIKOLAI

Examiner

Blanche Wong

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2667

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,8,9,12 and 14-17 is/are rejected.
- 7) ☒ Claim(s) 3-7,10-11,13,18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date #3,4,5. (7/26/01; July 23, 2001; Jan 17, 2002)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Specification*

1. The abstract of the disclosure is objected to because there is miscellaneous information. Fig. 2 after the abstract paragraph is hanging by itself. Correction is required. See MPEP § 608.01(b).

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. **Claims 1 and 2** are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Lucent Technologies Inc (EP 0 980 153 A2, as provided by applicant).

With regard to claim 1, Lucent discloses a method for multiplexing communication connections in a telecommunication system based on time division multiple access (TDMA wireless telecommunication system), comprising the steps of:

- defining a burst structure Fig. 2-6 that consists of symbols (col. 2, ln. 10-22, frame format arranges the slots and slot format arranges user and signaling information, information are symbols; see also GT, RT, DATA, SYNC, SACCH, CDVCC, R, CDL are symbols in slots 202,204) and fills a time slot 202,204 at a radio interface,

- filling the burst structure Fig. 2-6 with symbols (col. 2, ln. 10-22, frame format arranges the slots and slot format arranges user and signaling information, information

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are symbols; see also GT, RT, DATA, SYNC, SACCH, CDVCC, R, CDL are symbols in slots 202,204), thus composing a transmission (TDMA) burst (IS-136 standard is a protocol used by many TDMA wireless communication systems col. 2, ln. 12-14 and slots 202, 204 are defined in IS-136 standard col. 2, ln. 33-36), and

- transmitting the transmission burst with a time slot (see also col. 2, ln. 48-50);

wherein the step of filling the burst structure with symbols comprises the substeps of:

- taking information symbols (DATA | D1; see also col. 2, ln. 26-29) of a first kind and filling a first part 603 of the burst 602 therewith,

- taking information symbols (DATA | D2; see also col. 2, ln. 26-29) of a second kind and filling a second part 604 of the burst 602 therewith and

- taking control symbols (SYNC,RSVD, PLT, R) and filling certain control parts 603,604 of the burst 602 therewith.

With regard to claim 2, Lucent also discloses that in order to separate different downlink (see col. 7, ln. 30-31, for downlink and uplink) transmission from a base station to mobile stations it comprises the steps of:

- taking information symbols (DATA | D1; see also col. 2, ln. 26-29) belonging to a first downlink communication connection between said base station and a mobile station and filling a first data field 603 in the burst 602 therewith, and

-taking information symbols (DATA | D2; see also col. 2, ln. 26-29) belonging to a second downlink communication connection between said base station and a mobile station and filling a second part 604 of the burst 602 therewith.

4. **Claims 15-17** are rejected under 35 U.S.C. 102(a) as being anticipated by Jones et al. (U.S. Pat No. 6,654,921).

With regard to claim 15, Jones discloses a receiving arrangement 504 (receiver system) comprising a burst decomposer 506 (FFT) arranged to decompose a transmission burst that consists of symbols and fills a time slot at a radio interface into sequences of information symbols, means for separately attempting the decoding 512,514 (Viterbi decoder, Reed-Solomon decoder) of different sequences of information symbols extracted from a transmission burst by said burst decomposer, and means for accepting (hard decisions in Fig. 5) as received those information symbols the decoding of which proved to be successful. Col. 5, ln. 58-col. 7, ln. 10.

With regard to claim 16, Jones also discloses a decoder 512,514 (Viterbi decoder, Reed-Solomon decoder) and parity checking (The Reed-Solomon Decoder 514 also includes parity checking.) means for checking the parity of different sequences of information symbols extracted from a transmission burst by said burst decomposer after decoding.

With regard to claim 17, Jones also discloses a means for extracting temporally 504 (receiver system) separate parts from received transmission bursts, a joint channel estimator 508 (channel estimation/equalization) arranged to generate at least two

mutually different channel estimates, and signal equalizer 508 (channel estimation/equalization) means for separately equalizing said extracted temporally separate parts of the received signal by using individual channel estimates.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 8-9,12 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lucent Technologies Inc (EP 0 980 153 A2, as provided by applicant) in view of Jones et al. (U.S. Pat No. 6,654,921).

With regard to claims 8 and 9, Lucent discloses receiving a signal (see col. 7, ln. 30-31, for downlink and uplink) for the whole duration of a time slot at a radio interface. However, Lucent fails to show expressly the extracting from a first part of a signal received during a time slot a number of information symbols of a first kind, extracting from a second part of said signal received during a time slot a number of information symbols of a second kind, attempting the decoding of said information symbols of a first kind, attempting the decoding of said information symbol of a second kind and accepting as received those information symbols the decoding of which proved to be successful, as recited in claim 8; and the step of parity checking a sequence of information symbols after attempted decoding, so that those information symbols are

accepted as received for which no parity errors were found in the parity checking, as recited in claim 9.

In an analogous art, Jones discloses the extracting from a first part of a signal received during a time slot a number of information symbols of a first kind, extracting from a second part of said signal received during a time slot a number of information symbols of a second kind, attempting the decoding of said information symbols of a first kind, attempting the decoding of said information symbol of a second kind and accepting as received those information symbols the decoding of which proved to be successful (Jones' invention is a decoding data from multiple sources, including sharing a single decoder 204 (decoder system). Decoding data from multiple sources can include a first and second part of a signal (data received via carrier freq. A,B,C in Fig. 2B) and decoded data out (Fig. 2B) can be information symbols of a first and second kinds. Extracting at the receiver system 304 is inherent in this process), as recited in claim 8. (See also Fig. 2A and 2B.) Furthermore, Jones also discloses the step of parity checking a sequence of information symbols after attempted decoding, so that those information symbols are accepted as received for which no parity errors were found in the parity checking (The Reed-Solomon Decoder 514 also includes parity checking.), as recited in claim 9.

A person of ordinary skill in the art would have been motivated to employ Jones in Lucent in order to obtain the benefits of decoding especially in conveying (Lucent, col. 2, ln. 38-39, convey is both transmit and receive) with multiple users (Lucent, col. 2, ln. 48-50). The suggestion/motivation to do so would have been to improve the

performance of point to multipoint communication systems by employing error correction coding because error correction coding techniques achieve greater reliability in data transmission by adding redundancy to data to be transmitted. Jones, col. 1, ln. 33-38. At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to which the invention pertains to combine Jones with Lucent to obtain the invention as specified in claims 8 and 9.

7. **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Lucent Technologies Inc (EP 0 980 153 A2, as provided by applicant) in view of Ericsson Radio Systems AB (WO 99/59269, as provided by the applicant).

With regard to claim 12, Lucent discloses a transmitter (see col. 7, ln. 30-31, for downlink and uplink) arrangement, comprising: a transmission burst (slots 202,204 format used by IS-136 protocol) that consists of symbols (see GT, RT, DATA, SYNC, SACCH, CDVCC, R, CDL are symbols in slots 202,204) and fills a time slot 602 at a radio interface. However, Lucent fails to show expressly a burst formatter arranged to compose a transmission burst that consists of symbols and fills a time slot at a radio interface, means for providing the burst formatter with information symbols of a first kind and information symbols of a second kind; wherein the burst formatter is arranged to fill a first part of a transmission burst with said information symbols of a first kind, a second part of the transmission burst with said information symbols of a second kind and certain control parts of the transmission burst with control symbols, as recited in claim 12.



In an analogous art, Ericsson discloses a burst formatter (a method and system for multiplexing multiple users; a burst formatter can be a multiplexer) arranged to compose a transmission burst that consists of symbols and fills a time slot at a radio interface, means for providing the burst formatter with information symbols of a first kind and information symbols of a second kind (multiplexing multiple users is a means for providing the burst formatter to multiple information symbols and controls); wherein the burst formatter is arranged to fill Fig. 7 a first part of a transmission burst with said information symbols of a first kind, a second part of the transmission burst with said information symbols of a second kind and certain control parts of the transmission burst with control symbols, as recited in claim 12.

A person of ordinary skill in the art would have been motivated to employ Ericsson in Lucent in order to obtain conveying and multiplexing multiple users. The suggestion/motivation to do so would have been to accommodate multiple information streams which are transmitted as a composite signal in a manner intended to improve the detection of the individual streams. Ericsson, p.1, ln. 10-13. At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to which the invention pertains to combine Lucent and Ericsson to obtain the invention as specified in claim 12.

8. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over Lucent Technologies Inc (EP 0 980 153 A2, as provided by applicant) in view of Ericsson Radio Systems AB (WO 99/59269, as provided by the applicant) as applied to claim 12 above, and further in view of Menzel (U.S. Pat No. 6,707,807).

With regard to claim 14, the combination of Lucent and Ericsson provided the transmitter arrangement according to claim 12. However, the combination fails to disclose a means for providing the burst formatter with information symbols of a first kind comprise a transmission subchain and said means for providing the burst formatter with information symbols of a second kind comprise means for instructing the burst formatter to use dummy symbols, as recited in claim 14.

In an analogous art, Menzel discloses a means for instructing the burst formatter to use dummy symbols (see dummy burst in Fig. 3).

A person of ordinary skill in the art would have been motivated to employ Menzel in the combination of Lucent and Ericsson in order to obtain a means for dummy symbols or burst. The suggestion/motivation to do so would have been to improve signal transmission of a TDMA mobile communication system that more effectively use the radio-oriented resources of the radio interface. Menzel, col. 2, ln. 24-28. At the time the invention was made, therefore, it would have been obvious to one of ordinary skill in the art to which the invention pertains to combine Menzel with the combination of Lucent and Ericsson to obtain the invention as specified in claim 14.

***Allowable Subject Matter***

9. **Claims 3-7,10-11,13,18** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Borth (U.S. Pat No. 4,852,090) discloses a TDMA communications system with adaptive equalization. User data in 112,122,132 are processed by equalizer syncs 115,125,135 and formatter 110,120,130.

Crisler et al. (U.S. Pat. No. 5,594,738) discloses a time slot allocation method. A time slot allocator transmits an allocation indication to the communication unit in each of N downlink time slots corresponding to the N allocation uplink time slots.

Hamalainen et al. (U.S. Pat No. 5,640,395) discloses a system for transmitting packet data in digital cellular TDMA air interface. Fig. 12 shows stealing bit and control signal.

Hatzipapafotiou (U.S. Pat No. 5,875,182) discloses an enhanced access burst for random access channels in TDMA mobile satellite system.

Raith (U.S. Pat No. 6,081,514) discloses a method and apparatus for enhanced functions using a reserved field. Decoding performance is improved by shortening the length of the codewords to be decoded.

Stark (U.S. Pat No. 5,938,787) discloses a communications systems and methods employing code rate partitioning with non-orthogonal modulation.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blanche Wong whose telephone number is 703-305-8963. The examiner can normally be reached on Monday through Friday, 830am to 530pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H Pham can be reached on 703-305-4378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*BW*

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April 28, 2004



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